

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2002-245812

(43)Date of publication of application : 30.08.2002

(51)Int.Cl. F21S 8/10
B60Q 1/44
F21V 23/00
F21V 23/02
H01L 33/00
// F21Y101:02

(21)Application number : 2001-043061

(71)Applicant : KOITO MFG CO LTD

(22)Date of filing : 20.02.2001

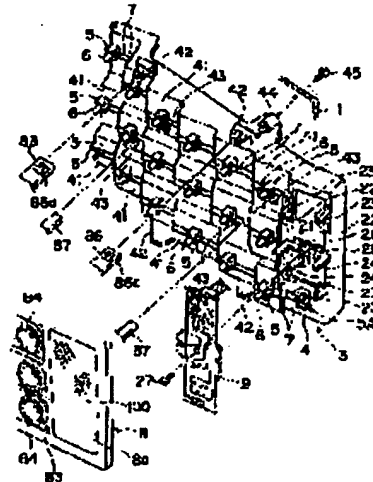
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(54) LIGHTING TOOL FOR VEHICLE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a lighting tool for a vehicle, of which a three-dimensional arrangement of LED's is easy, a control circuit board is well contained in a base so as not to be seen from a lens, and the LED's are hardly affected by heat at the side control circuit board.

SOLUTION: With the lighting tool packaging inside a light-source unit 3 incorporating a plurality of LED's 6, a base 4 for supporting the LED's in alignment, electric cords 7 electrically connecting the LED's 6 and a control circuit board 9 controlling lighting of the LED's 6 in a lighting room S composed of a lamp body 1 and a lens 2 fitted to a front opening of the lamp body 1, the control circuit board 9 is arranged at a given position at a front side of the base 4 separated in two dimensions from the LED's 6 to realize easiness of fitting of the circuit board 9, avoiding heat from the side of the circuit board 9 affecting the LED's 6, and thinning of the lighting room, and moreover, a reflex reflector 100 for concealing the circuit board 9 is fitted at a front side of the lighting room S to improve outer appearance.



LEGAL STATUS

[Date of request for examination] 29.03.2004

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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★KOIT Q16;U12 2002-744891/81 ★JP 2002245812-A
Lamp for vehicles, has control circuit substrate separated
two-dimensionally with light emitting diodes, and arranged between back
of opaque section and front surface of base

KOITO MFG CO LTD 2001.02.20 2001JP-043061

Q71 X22 X26 (2002.08.30) F21S 8/10, B60Q 1/44, F21V 23/00, 23/02,
H01L 33/00, (F21Y 101:02)

Novelty: The lamp includes a control circuit substrate (9) which is separated
two-dimensionally with the light emitting diodes (6). The control circuit substrate is
arranged between the back of an opaque section and the front surface of a base. A
transparent section enables the emission of light from the light emitting diodes.

Use: For vehicles.

Advantage: Obtains appropriate light quantity for a long period of time. Reduces the
size of the lamp attachment space in the vehicle body. Improves external appearance
of the lamp. Reduces assembly cost since the number of components is reduced and
structure is simplified.

Description of Drawing(s): The figure shows the exploded perspective view of the
principal part of the lamp.

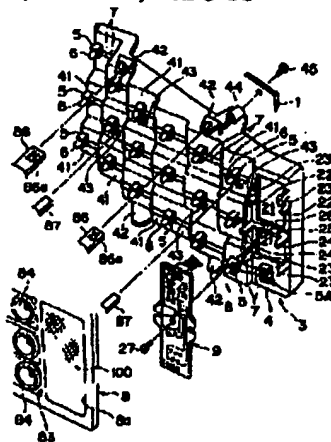
Light emitting diodes 6

Control circuit substrate 9

(9pp Dwg.No.4/8)

N2002-586815

U12-A01; X22-B01F; X26-D; X26-H; X26-X



*** NOTICES ***

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CLAIMS

[Claim(s)]

[Claim 1] To the LGT interior of a room which consists of front lenses attached to front opening of the container-like lamp body and said lamp body In the lighting fixture for cars to which the interior of the light source unit which unified the control circuit substrate which controls lighting of the base which supports two or more light emitting devices and said light emitting device in the array condition, the power cord which carries out electrical connection of said light emitting device, and said light emitting device was carried out The light transmission section which corresponds to said light emitting device and carries out outgoing radiation of the luminescence of a light emitting device to the front-face side of said LGT room, It is the lighting fixture for cars characterized by having prepared the light impermeability section which constitutes a reflex reflector or the dummy section, having estranged said control circuit substrate two-dimensional with said light emitting device, and having been arranged between said light impermeability section tooth backs and said front faces of the base.

[Claim 2] The lighting fixture for cars according to claim 1 characterized by for said terminal **** (ing) pre-insulation of said electric code arranged in said electrode holder, and holding said terminal in the pressure-welding condition at the electric code core wire section if shaping unification is carried out and the electrode holder for inserting said light emitting device in the front face of said base inserts said light emitting device in said electrode holder from the terminal side.

[Claim 3] The lighting fixture for cars according to claim 1 or 2 characterized by preparing opening corresponding to said control circuit substrate in said base.

[Claim 4] Said control circuit substrate is a lighting fixture for cars according to claim 1 to 3 characterized by estranging and carrying out arrangement immobilization from the base with two or more ribs projected and formed in said base.

[Claim 5] It is the lighting fixture for cars according to claim 1 to 4 characterized by for said LGT room being the configuration which turned to the method of car cross direction center-section approach empty vehicle both sides, and forming said control circuit substrate in the car cross direction center-section approach of said LGT room.

[Claim 6] The lighting fixture for cars according to claim 1 to 5 characterized by arranging the reflector which surrounds said light emitting device, for said front lens constituting said light transmission section between said front lenses and said bases, and the reflex reflector or the dummy section by which connection unification was carried out constituting said light impermeability section in said reflector.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the lighting fixture for cars which couples especially the lead terminal of LED directly with a power cord, and performs electrical connection with respect to the lighting fixture for cars which uses light emitting devices (LED is called hereafter), such as LED (light emitting diode), as the light source.

[0002]

[Description of the Prior Art] As a beacon light of an automobile, the lighting fixture which used LED for the light source especially as rear lamps, such as a tail & stop lamp of an automobile and a turn signal lamp, is proposed. With such 1st conventional technique of a lighting fixture, two or more LED is carried in the circuit board, direct electrical connection of each LED is carried out to the circuit pattern prepared in the circuit board, and the configuration which energizes and emits light is taken.

[0003] And when it is required like the car-body corner section of an automobile that the front face of a lighting fixture should be formed as the quadratic surface or a Miyoshi curved surface, it is necessary to make this follow and to form in the quadratic surface or the Miyoshi curved surface the circuit board in which LED is carried. In the case of the quadratic surface, although it can be coped with by crooking the circuit board, in the case of the Miyoshi curved surface, it is necessary to divide the circuit board into two or more circuit boards, and to carry out three-dimensions arrangement, the structure of the circuit board is complicated as a result, and it becomes loam Lycium chinense about high cost-ization.

[0004] Then, direct LED is not connected to the circuit board as 2nd conventional technique. While preparing based on the electrode holder holding LED, forming the control circuit substrate which controls lighting of the whole LED in the background of the base and installing a power cord in said holder, when insertion maintenance of the LED is carried out at a holder The lead terminal of LED removes covering of an electric code, and the lighting fixture (JP,2000-243110,A) of a configuration (this is hereafter called pressure-welding wiring structure) of being held at the gestalt by which electrical connection of the lead terminal of LED was carried out to the core wire of a power cord is proposed. If such pressure-welding wiring structure is adopted, two or more circuit boards are unnecessary, and since three-dimensions arrangement of LED moreover becomes easy, it will become effective, when aiming at reduction of cost.

[0005]

[Problem(s) to be Solved by the Invention] However, while the degree of freedom of three-dimensions arrangement of LED is restricted with the 1st conventional technique, through a front lens, the circuit board is transparent, it is visible, and appearance is bad. Moreover, since direct continuation of the LED is carried out to the circuit board, LED tends to be influenced of the heat by the side of the circuit board (generation of heat of the resistance carried especially in the circuit board).

[0006] Moreover, with the 2nd conventional technique, although there is no constraint of the degree of freedom of three-dimensions arrangement of LED for pressure-welding wiring structure, since the control circuit substrate is arranged on the background of the base, the depth of a LGT room becomes large. When the base is especially formed in the three-dimensions configuration, a

lighting fixture becomes so thick at a cross direction, and the lighting fixture installation tooth space in a car body is also so much needed. Moreover, there was also a problem of being hard to fix a control circuit substrate firmly in the base background of the quadratic surface or the Miyoshi curved surface.

[0007] This invention was made in view of the trouble of the above mentioned conventional technique, three-dimensions arrangement of LED is easy for the purpose, its settlement of a control circuit substrate to the base is good, and a control circuit substrate does not appear through a lens, but it is in offering the lighting fixture for cars in which LED cannot receive effect of the heat by the side of a control circuit substrate easily.

[0008]

[Means for Solving the Problem] In the lighting fixture for cars which starts claim 1 in order to attain said purpose To the LGT interior of a room which consists of lenses attached to front opening of the container-like lamp body and said lamp body In the lighting fixture for cars to which the interior of the light source unit which unified the control circuit substrate which controls lighting of the base which supports two or more light emitting devices and said light emitting device in the array condition, the power cord which carries out electrical connection of said light emitting device, and said light emitting device was carried out The light transmission section which corresponds to said light emitting device and carries out outgoing radiation of the luminescence of a light emitting device to the front-face side of said LGT room, The light impermeability section which constitutes a reflex reflector or the dummy section was prepared, and said control circuit substrate was made to estrange two-dimensional with said light emitting device, and it was constituted so that it might arrange between said light impermeability section tooth backs and said front faces of the base.

[0009] While fixed unification is carried out mechanically and the case where fixed unification was carried out mechanically and the base, an electric code, and a control circuit substrate are constituted as a light source unit, and the base and an electric code are constituted here Fixed unification may not be carried out mechanically, but it may be mechanically fixed to the base by the light impermeability section (a reflex reflector or dummy section), may connect with the base in power cord, and a control circuit substrate may be unified as a light source unit. Moreover, the reflex reflector consists of retroreflection sides which reflect light in the direction of incidence and opposite direction of light, a reflector and reflective paint are prepared in a lens and the dummy section is a part for [that] showing like that [whose] is a part of luminescence field of a lamp. (Operation) By forming the base in the configuration where the LGT room and the front lens were imitated, the three-dimensions arrangement of the light emitting device can be carried out. Three-dimensions arrangement of a light emitting device becomes easy by forming each step which is stair-like and turns into a supporter of a light emitting device in the base front-face side which arranges a light emitting device especially so that the Miyoshi side curved surface may be met.

[0010] Moreover, even if the base is a three-dimensions configuration, compared with a base background, a settlement of a control circuit substrate will tend to form a good flat side, and the front-face side of the base will tend to attach a control circuit substrate.

[0011] Moreover, since a light emitting device and a control circuit substrate are in the location estranged two-dimensional (in namely, the direction of four directions), a light emitting device cannot be easily influenced of the heat which a control circuit substrate (it mainly resists) emits.

[0012] Moreover, space is surely between the base and a front lens, and by arranging a control circuit substrate to the front-face field side of the base, a light source unit does not need to become thick and does not need to expand the depth of a LGT room to a base tooth-back side.

[0013] Moreover, the light impermeability section (a reflex reflector or dummy section) is prepared, and a control circuit substrate is not transparent and visible to the front-face side of a control circuit substrate through a front lens.

[0014] In claim 2, in the lighting fixture for cars according to claim 1, when the shaping unification of the electrode holder for inserting said light emitting device in the front face of said base was carried out and said light emitting device was inserted in said electrode holder from the terminal side, it constituted so that said terminal might **** pre-insulation of said electric code

arranged in said electrode holder and said terminal might be held in the pressure-welding condition at the electric code core wire section.

[0015] Here, for example the lead terminal of LED is set to the pars intermedia of the die-length direction, is processed in the direction of board thickness by return, and is inserted in said holder in two places of the example of a tip the end face side, and is contacted by said electric code.

Namely, the lead terminal inserted in the electrode holder **** pre-insulation of a power cord, and will be in a pressure-welding condition at the core wire section.

(Operation) The electrical installation between two or more light emitting devices is the pressure-welding wiring structure where a light emitting device is only inserted in an electrode holder, and the lead terminal of a light emitting device and the core wire section of a power cord will be in a pressure-welding condition, and since the shaping unification of the electrode holder is moreover carried out at the base, there are few components mark which constitute a light source unit.

[0016] In claim 3, in the lighting fixture for cars according to claim 1 or 2, it constituted so that opening corresponding to said control circuit substrate might be prepared in said base.

(Operation) Although electronic parts are carried in a printed wired board and it is constituted, a control circuit substrate can make small the amount of protrusions ahead of [base] a control circuit substrate while being able to avoid interference between a control circuit substrate (electronic parts) and the base by arranging a control circuit substrate so that electronic parts may project in opening circles.

[0017] Moreover, since generation of heat by the side of a control circuit substrate radiates heat between a front lens and the base interspace and also radiates heat to the base back space of the LGT interior of a room through opening, a light emitting device cannot be influenced so easily of the heat which a control circuit substrate side emits.

[0018] In claim 4, in the lighting fixture for cars according to claim 1 to 3, it constituted so that it might be made to estrange from the base and arrangement immobilization might be carried out with two or more ribs which projected and formed said control circuit substrate in said base.

(Operation) There are so few heating values by the side of the control circuit substrate transmitted to a base side with the structure where the fixed unification of the control circuit substrate is carried out at the base since the contact section of the base and a control circuit substrate is only a rib.

[0019] Moreover, when opening corresponding to a control circuit substrate is especially prepared in said base, base back space and base front space are open for free passage through said opening, the air convection current of the circumference of the base which passes along said opening is generated, and the heat dissipation nature from a control circuit substrate increases.

[0020] In claim 5, in the lighting fixture for cars according to claim 1 to 4, it is the configuration which turned around said LGT room to the method of car cross direction center-section approach empty vehicle both sides, and it constituted so that said control circuit substrate might be formed in the car cross direction center-section approach of said LGT room.

(Operation) If the moldability (simplicity of metal mold structure) of the base of a three-dimensions configuration is taken into consideration, as for the control circuit substrate clamp face of the base, it is desirable the front face of each step which the electrode holder has projected, and that they are parallel (perpendicular to the path of insertion to the electrode holder of LED) mostly, and the base consists of structures where the fixed unification of the control circuit substrate is carried out at the base, such. And it becomes so small that the control circuit substrate clamp face of the base and spacing between front lenses go that it is the configuration around which the LGT room (front lens) turned horizontally to a car cross direction outside, and becomes so large that it goes to a car cross direction center section. For this reason, spacing with a front lens fully formed the control circuit substrate in a certain base car cross direction center-section approach.

[0021] Moreover, the car cross direction center-section approach of a LGT room is almost straight horizontally, the car cross direction center-section approach of the base is also formed horizontal almost straightly, and it is easy to constitute so that the almost straight field of this base may be made to support a plane control circuit substrate.

[0022] In claim 6, in the lighting fixture for cars according to claim 1 to 5, the reflector which

surrounds said light emitting device between said front lenses and said bases is arranged, said front lens constitutes said light transmission section, and the reflex reflector or the dummy section which carried out connection unification constituted said light impermeability section in said reflector.

(Operation) Although a possibility that a control circuit substrate is transparent and may appear through a front lens (light transmission section) from across is in it when a direct reflex reflector or the dummy section is prepared in a front lens, since the reflector which are other light impermeability sections is connected [lens] by the periphery of the reflex reflector which is the light impermeability section, or the dummy section, there is no possibility that a control circuit substrate is transparent and may appear through a front lens (light transmission section).

[0023]

[Embodiment of the Invention] Next, the operation gestalt of this invention is explained based on an example.

[0024] Drawing 1 - drawing 8 show the example which applied the lighting fixture of this invention to the tail for automobiles, and the stop lamp. The front view of this lamp and drawing 2 drawing 1 The horizontal sectional view of this lamp (sectional view in alignment with line II-II shown in drawing 1), For the important section decomposition perspective view of this lamp, and drawing 5 , the important section enlarged vertical longitudinal sectional view of this lamp and drawing 6 are [drawing 3 / drawing of longitudinal section (sectional view in alignment with line III-III shown in drawing 1) of this lamp, and drawing 4 / an electrode holder and the decomposition perspective view of LED, and drawing 8 of drawing of longitudinal section of an electrode holder and drawing 7] the perspective views of a control circuit substrate.

[0025] As shown in these drawings especially drawing 1 , and 2, a tail and a stop lamp are attached in the left corner section of an automobile posterior part, and are formed in the configuration around which the whole configuration turned horizontally, applying to the method of car-body cross direction center-section approach empty vehicle object left-hand side. Therefore, front opening of the lamp body 1 made of container-like synthetic resin is formed in the three-dimensions configuration where the Miyoshi side of the automobile shell plate C (refer to drawing 2) was imitated. And the front lens 2 formed in the three-dimensions configuration where the Miyoshi side of the automobile shell plate C was imitated attaches, is united with front opening of the lamp body 1, and the LGT room S (drawing 2 , 3 reference) is formed with the lamp body 1 and the front lens 2. In addition, the front lens 2 is being fixed to front opening periphery section 1a of the lamp body 1 by heat joining etc. in the periphery section.

[0026] And in the LGT room S, as shown in drawing 2 and 3, the reflector 8 of a configuration which met the front lens 2 mostly is held, and the extension section 83 of a reflector 8 is formed in the same Miyoshi side configuration as the front lens 2. Moreover, the reflector 8 has two or more RIFUREKUTATA sections 84 of the paraboloid-of-revolution configuration which counters each LED6 assembled by the base 4 mentioned later.

[0027] Moreover, the vacuum-plating-of-aluminium film etc. is formed and a reflector 8 is constituted by the front-face side as a reflector while it is fabricated by one with resin shaping using the resin of the same quality of the material as the base 4. Especially the reflector of the RIFUREKUTATA section 84 consists of crimp processing processing reflectors in which minute irregularity was prepared, and diffuse reflection of the luminescence of LED6 is carried out. The outer lens 2 is a light red color, and luminescence of the red of LED6 becomes the red which is deep by penetrating the outer lens 2.

[0028] Moreover, a reflector 8 is entirely settled inside the lamp body 1, is lamp welding [1] the front lens 2, and is fixed without backlash between the front lens 2 and the lamp body 1.

[0029] Moreover, opening 84a is prepared in the tooth back of each reflector section 84 of RIFUKURETA 8, and in this opening 84a, the resin mold 62 of LED6 supported by the base 4 faces, it is arranged, and the resin mold 62 of LED6 is held at the gestalt surrounded by RIFUKURETA 8 (reflector section 84) (refer to drawing 5).

[0030] As shown in drawing 4 , four hanging hooks 42 projected and formed in the front-face side of the base 4 to namely, engagement hole 86a of the piece 86 of extension by which extension

formation was carried out at the tooth-back side of a reflector 8. If the piece 87 of extension by which extension formation was carried out at the tooth-back side of a reflector 8 is made to engage with the four-piece engagement hole 43 prepared in the front-face side of the base 4, respectively. While the resin mold 62 of LED6 supported by the base 4 projects from opening 84a of RIFUKURETA 8, the tooth-back side of a reflector 8 is contacted, a reflector 8 and the base 4 of each other are positioned by the four-directions cross direction, and the fixed unification of the periphery section of the base 4 is carried out without backlash.

[0031] Moreover, although the control circuit substrate 9 supported by the base 4 is arranged behind the right end section approach of RIFUKURETA 8 attached to the lamp body 1, the reflex reflector 100 which consisted of retroreflection sides which turn the light which carried out incidence through the front lens 2 from car-body back in the direction of incidence, and are reflected is formed in the location corresponding to the control circuit substrate 9 of a reflector 8.

[0032] It is fixed to opening 8a prepared in the right-hand side edge approach of RIFUKURETA 8 by adhesion etc., and this reflex reflector 100 is united with the reflector 8. Therefore, the reflex reflector 100 was connected [section / of opening 8a of a reflector 8 / periphery] without the clearance, and the control circuit substrate 9 arranged behind a reflector 8 was certainly hidden by this reflex-reflector one apparatus reflector 8.

[0033] Moreover, the side reflex reflector 102 (drawing 1 , 2 reference) which consisted of retroreflection sides which turn the light from the car-body side which carried out incidence through the front lens 2 in the direction of incidence, and are reflected is formed in the left-hand side edge approach of RIFUKURETA 8.

[0034] Next, the detail of the light source unit 3 which consists of ** 1 SU 4, LED6, a power cord 7, and a control circuit substrate 9 is mainly explained with reference to drawing 2 , and 3 and 4.

[0035] The base 4 consists of two or more steps 41 which carried out stairway arrangement in the direction of three dimensions, and each step 41 is mostly arranged in accordance with the Miyoshi side configuration of the front lens 2, and is being fixed to the lamp body 1. While the holder 5 for LED insertion of the same configuration protrudes altogether and LED6 is held at this holder 5, the electric code 7 which has pre-insulation is installed in each step 41 over each holder 5, and energization to each LED6 is performed to it by this electric code 7. The control circuit substrate 9 which constitutes the electrical circuit for controlling luminescence of LED6 is attached in the front-face side of the right-hand side edge of the base 4, and electrical connection of the power cord 7 prolonged in each electrode holder 5 is carried out to this control circuit substrate 9.

[0036] The electrode holder 5 is united with the base 4 by one shaping of resin, a step 41 is formed stair-like towards the vertical direction and longitudinal direction of a car body, and when these are enveloped, each electrode holder 5 which protruded on each step 41 and each step 41 is formed in one by resin shaping so that the Miyoshi curved surface which is mostly parallel to the front lens 2 may be constituted. And the base 4 is ****ed on the lamp body 1 in the boss section 44 prepared in one place of the periphery, and is being fixed by 45. (Refer to drawing 4) The front face is formed in the container configuration of the rectangle by which opening was carried out, and the electrode holder 5 is perpendicularly projected to the front face of a step 41 so that it may expand to drawing 5 , and 6 and 7 and may be shown. Front opening of a holder 5 is formed by two lead insertion openings 54 located in a line with the longitudinal direction by the protruding line 53 prepared in the longitudinal direction mid-position of a both-sides wall inside, and notching formation of the code insertion slot 55 is carried out towards the tooth-back side at the both-sides wall of the holder 5 corresponding to these two lead insertion openings 54 from the front-face side. In addition, although this code insertion slot 55 is broadly formed by the opening side, in tip side 55a, it is formed in narrow and the width-of-face dimension of this slot tip side 55a is made almost equal to the path dimension of the electric code 7. In addition, the piece 56 of a guide to which the lead tip of LED6 fits into the inner base of the lead insertion opening 54 of the tip location of the code insertion slot 55 is set up.

[0037] LED6 is the configuration that the parallel lead terminal 63 of the pair by which electrical connection is carried out to the LED component chip 61 was projected from the resin mold 62 while closing the LED component chip 61 by the resin mold 62 so that it is constituted as a

discrete mold LED, and may expand to drawing 7 and may be shown. Sign 61a shows the BODINGU wire which connects the LED component chip 61 and the opposite lead terminal 63. A lead terminal 63 cuts separately the leadframe which pressed or processed [etching] the metal plate, and bending of it is carried out and it is formed, and before bending, as shown in the drawing 7 imaginary line, it is carrying out the long and slender piece configuration of a band of having a slit 64 to a central field. Here, the width-of-face dimension of a lead terminal 63 is formed in the dimension [a little] smaller than the width-of-face dimension of the terminal insertion opening 54 of a holder 5.

[0038] On the other hand, the slit 64 consists of the broad slit sections 65 and the narrow slit sections 66 of both ends of the pars intermedia of the die-length direction, the narrow slit section 65 is formed in an ellipse mold, and boundary section 65a with the narrow slit section 66 is formed in the shape of radii. Moreover, the width-of-face dimension of the broad slit section 65 is formed in a larger dimension a little than the path dimension of the electric code 7, and the width-of-face dimension of the narrow slit section 66 is formed in the dimension almost equal to the path dimension of the core wire in the pre-insulation of the power cord 7. and the two forks to which it be mostly turned up in the shape of an abbreviation KO character in the direction of board thickness in the mid-position of the die length direction , i.e. , the mid-position of the broad slit section 65 , and the lead terminal 63 used the mid-position of the broad slit section 65 as the tip by this as a lead terminal 63 be showed in drawing 7 -- a ** -- and it will be form of a clinch as a lead of the two - sheet cutting edge configuration of width of face equal to the width of face dimension of the lead insertion opening 54 of a holder 5 .

[0039] Moreover, it escapes and the minute projection 69 for stops is formed, and if a lead terminal 63 is inserted into an electrode holder 5, the minute projection 69 will eat into a wall surface, and will escape from and carry out the stop of the lead terminal 63 to the side edge of a lead terminal 63.

[0040] In case the light source unit 3 is assembled in the base 4 of the above configuration, LED6, and power cord 7, two electric codes 7 are first arranged in parallel over each holder 5 of the base 4. The electric code 7 is a pre-insulation electric-wire code which covered the core wire 71 with the insulating material, and is inserted into the code insertion slot 55 established in a pair each of lead insertion openings 54 of a holder 5, respectively so that it may expand to drawing 5 and may be shown. In an appropriate top, the lead terminal 63 of the pair of LED6 is inserted into each lead insertion opening 54 to the power cord 7. First, the lead terminal 63 inserted runs so that the broad slit section 65 may sandwich the pre-insulation 72 of the power cord 7 in the direction of a path, and subsequently, while the narrow slit section 66 **** pre-insulation 72, it runs. Since boundary section 65a of the broad slit section 65 and the narrow slit section 66 is carrying out the edge configuration near a right angle at this time, the **** effectiveness of pre-insulation is heightened. And if the narrow slit section 66 is inserted to the location whose power cord 7 is pinched, the narrow slit section 66 and the core wire 71 of the electric code 7 will be contacted directly, and electrical connection of a lead terminal 63 and the power cord 7 will be performed. And since the minute projection 69 prepared in the side edge of a lead terminal 63 eats into a wall surface, a gestalt [having carried out the pressure welding of the lead terminal 63 to the core wire 71 in the inserted location] will be held firmly.

[0041] Moreover, since the lead terminal 63 is made the two-sheet cutting-edge configuration by bending, a lead terminal 63 will be contacted by the inside of the lead insertion opening 54 in each ****, and, as a result, LED6 is hard to be concentrated as described above.

[0042] Moreover, since electrical connection of the lead terminal 63 is carried out by two places to the electric code 7 in each ****, also when positive connection is attained and the contact resistance between both is reduced, it is advantageous.

[0043] On the other hand, electrical connection of the power cord 7 is carried out to the control circuit substrate 9 which the end attached in the base 4 (refer to drawing 4). That is, as the control circuit substrate 9 is shown in drawing 8 , while the various electronic parts 92 are carried on a printed circuit board 91, the power cord 94 which connected the part to the dc-battery outside drawing is connected through the connector 93. And in order to perform electrical connection of a

printed circuit board 91 and the power cord 7, the electrode terminal 96 of the pair which carried out the same configuration as the lead terminal 63 of LED6 is set up by a part of tooth back (electrical-part 92 loading side) of a printed circuit board 91. That is, this electrode terminal 96 attaches those both ends in a printed circuit board 91 by soldering, after carrying out bending only of the lead terminal 63 of LED6 similarly. Therefore, the slit 97 as the slit 64 which consists of the broad slit section 65 and the narrow slit section 66 of a lead terminal 63 towards the tip to a end face with the same electrode terminal 96 is formed.

[0044] Moreover, holder 5A of the same structure as a holder 5 is projected and formed in the front-face side of the right-hand side edge approach of the base 4. And in order to connect the power cord 7 to the electrode terminal 96 by the side of the control circuit substrate 9, the electric code 7 is inserted in the code insertion slot 55 of holder 5A which makes the base 4 supine first so that a front-face side may become a top, and carries out opening to the upper part. Subsequently, the gestalt which turns a control circuit substrate 9 electronic-parts 92 loading-side down, namely, is shown in drawing 8 is exactly made upside-down, and an electrode terminal 96 is inserted in holder 5A. Thereby, by the slit 97 of an electrode terminal 96, like the case of LED6, the electric code 7 in holder 5A **** pre-insulation of the power cord 7, and the electrical connection of the electric code 7 and an electrode terminal 96 of it becomes possible.

[0045] If the opening 21 corresponding to the control circuit substrate 9 is formed and it puts in another way for the right-hand side edge approach of the base 4 as shown in drawing 4, moreover, the right-hand side edge approach of the base 4 It is formed in the frame configuration in which the opening 21 corresponding to the control circuit substrate 9 was formed. In the periphery section of opening 21 The rib 22 of a Uichi Hidari pair which collaborates with holder 5A and supports the control circuit substrate 9, Two pairs of hanging pawls 23 which position the control circuit substrate 9 to a longitudinal direction, and escape from and which carry out a stop, it engages with notching by the side of the control circuit substrate 9, and positions -- it comes and the hanging rib 24 protrudes -- having -- method ** of the upper and lower sides of opening 21 -- the level rib 25 which supports the control circuit substrate 9 protrudes also on the location which crosses a center section right and left mostly.

[0046] And if the control circuit substrate 9 is resisted and stuffed into the energization force of ribs 23 and 24 and an electrode terminal 96 is inserted into electrode-holder 5A, the control circuit substrate 9 will serve as a gestalt which was positioned in the direction of four directions, and was supported with ribs 22 and 25 and electrode-holder 5A. Then, it ****s to the boss 26 set up by the level rib 25, 27 is allotted, and the control circuit substrate 9 is held by fixing the control circuit substrate 9 to the base 4 at the gestalt estranged from the front face of the base 4.

[0047] In this tail & stop lamp, the power from the power cord 94 by which electrical connection is carried out to the dc-battery outside drawing is supplied to the control circuit substrate 9, and is further supplied to the power cord 7 of the pair by which electrical connection is carried out to an electrode terminal 96. And these electric codes 7 are installed in the holder 5 currently set up by two or more steps 41 of the base 4, electrical connection is carried out to the lead terminal of LED6 into a holder 5, and each LED6 emits light. It is condensed by the reflector section 84 of a reflector 8, and outgoing radiation of the luminescence of LED6 is carried out ahead [of a lamp] through a lens 2.

[0048] And as an attachment procedure of this lamp, first, the light source unit 3 is attached to a reflector 8, and it unites with it. This reflector and light source unit attachment object are held in the lamp body 1, and after carrying out the joining unification of the front lens 2 at the lamp body 1, a lamp body 1 tooth-back wall and the base 4 of the light source unit 3 are ****ed from the tooth-back side of the lamp body 1, and it fixes by 45. In addition, joining to the lamp body 1 of the front lens 2 and immobilization with a lamp body tooth-back wall and the base 4 are good for which to come the point.

[0049] By thus, the thing for which LED6 is inserted in the holder which formed two or more steps 41 which formed the base 4 stair-like and carried out three-dimensions arrangement in this example, and was further formed in each step 41, respectively Since three-dimensions arrangement of LED6 is realized, it is not necessary to carry out three-dimensions arrangement and to assemble

two or more substrates like before, the reduction and low-cost-izing of components mark which constitute the light source unit 3 further can be realized, and, moreover, simplification of an assembly activity is attained.

[0050] By on the other hand, inserting the lead terminal 63 of LED6 into the lead insertion opening 54 of a holder 5 on the occasion of the assembly of the light source unit 3, after inserting the electric code 7 in the code insertion hole 55 of a holder 5, by fitting of a lead terminal 63 and the lead insertion opening 54, both maintenance of LED6 and electrical connection of LED6 and the electric code 7 can be performed to coincidence, and an assembly becomes very easy.

[0051] Moreover, at this time, in boundary section (edge) 65a of the broad slit section 65 and the narrow slit section 66 which were prepared in the lead terminal 63, pre-insulation 72 of the power cord 7 is ****(ed) suitably, and good electrical connection of a lead terminal 63 and the core wire 71 of the power cord 7 is performed. Furthermore, since the lead terminal 63 of LED6 is bent and is considered as the two-sheet cutting-edge configuration by processing While contact in a lead terminal 63 and the power cord 7 is performed by two places and suitable electrical connection is possible The large dimension of the direction of board thickness of a lead terminal 63 can be taken, it is prevented that LED6 concentrates within a holder 5, and the stability of the direction of an optical axis of LED6 and the electrical connection nature to the power cord 7 can improve, respectively.

[0052] Moreover, since it forms with the same quality of the material as the base 4, even when the base 4 and a reflector 8 are heated by luminescence of LED6, since thermal expansion of the base 4 and the reflector 8 is carried out equally, relative-position change of RIFUREKU 8 does not arise to the base 4, and the reflector 8 attached in the base 4 in one can prevent a location gap of the optical-axis location of LED6 in the reflector section 83.

[0053] Moreover, since the control circuit substrate 9 in the light source unit 3 is arranged to the base 4 so that the carried electronic parts 92 may project in opening 21, electronic parts 92 do not interfere with the base 4, and the control circuit substrate 9 installation section does not become thick.

[0054] Moreover, since generation of heat by the side of the control circuit substrate 9 radiates heat to the front-face side of the base 4 and also radiates heat to the base 4 back space in the LGT room S through opening 21, LED6 cannot be influenced so easily of the heat which the control circuit substrate 9 side emits.

[0055] Moreover, since the control circuit substrate 9 estranges and is formed in it from the base 4 with the rib while the opening 21 corresponding to the control circuit substrate 9 is formed in the base 4, the air convection current which passes along opening 21 in the circumference of the control circuit substrate 9 is generated, and the heat dissipation nature from the control circuit substrate 9 is good.

[0056] In addition, although said example explained the structure where the electrode holder 5 was really fabricated by the base 4, as shown in the 2nd conventional technique, you may be the structure which inserts based on the base and the electrode holder 5 formed in another object, and can be unified.

[0057] Moreover, although said examples are consisted of by the reflex reflector 100 united with the reflector 8 so that the control circuit substrate 9 may be hidden, it may replace with a reflex reflector 100 and the dummy section which made the extension section 83 extend so far may constitute.

[0058] Moreover, although the light source unit 3 in said example is the structure where the fixed unification of the base 4, LED6, the power cord 7, and the control circuit substrate 9 was carried out mechanically, and the fixed unification of the base 4 and the electric code 7 is mechanically carried out as a light source unit, the control circuit substrate 9 may not necessarily be the structure by which fixed unification was mechanically carried out as a light source unit. That is, the control circuit substrate 9 may be that fixed unification is not mechanically carried out to a light source unit, but the control circuit substrate 9 fixed mechanically is connected to the reflex reflector and the dummy section which are the light impermeability section through the electric code 7 at a light source unit, and may be the structure unified as a light source unit. In addition, what is necessary is

to **** to the boss and rib which projected and formed the control circuit substrate 9 in the light impermeability section side like the structure fixed to the base 4 in the above mentioned example as a means to fix the control circuit substrate 9 to the light impermeability section (a reflex reflector and dummy section), to make estrange from the light impermeability section by the stop and hanging and place in a fixed position, or just to constitute from a mechanical fixed means of concavo-convex lance engagement, adhesion, and others.

[0059] Moreover, although it is the example which applied this invention to the tail & stop lamp in said example, it cannot be overemphasized that it is applicable to other lamps.

[0060] Moreover, of course, it is also possible to apply this invention to the lighting fixture of the quadratic surface. Furthermore, in this invention, if the base and LED are equipped with the function concerning this invention, respectively, the configuration of these each will not be restricted to the configuration of said example.

[0061]

[Effect of the Invention] As explained above, since the degree of freedom of three-dimensions arrangement of a light emitting device is high, according to the lighting fixture for cars concerning claim 1, it is applicable to the lighting fixture of various configurations by forming the base in the configuration where the LGT room was imitated.

[0062] Immobilization at the base of a control circuit substrate is trustworthy, and seems moreover, not to shake, since the settlement by the base of a control circuit substrate is good.

[0063] Moreover, since a light emitting device cannot be easily influenced of the heat which a control circuit substrate side emits, the lighting fixture for cars from which the proper quantity of light is obtained over a long period of time is offered.

[0064] Moreover, since it is not necessary to expand the depth of a LGT room, a lighting fixture is not enlarged, but the lighting fixture installation tooth space in a car body is also so small, and it ends.

[0065] Moreover, since a control circuit substrate is transparent and does not appear through a front lens, appearance appearance is also good.

[0066] Since there are few components mark from which the electrical installation between two or more light emitting devices is pressure-welding wiring structure, and moreover constitutes a light source unit according to claim 2, the assembly of a light source unit is easy and can reduce the cost of a lighting fixture.

[0067] Since there are few amounts of protrusions ahead of [base] a control circuit substrate while being able to attach based on a control circuit substrate according to claim 3, without damaging loading electronic parts, a lighting fixture with thin order thickness can be offered.

[0068] Moreover, since a light emitting device cannot be influenced much more easily of the heat which a control circuit substrate side emits, the lighting fixture for cars from which the proper quantity of light is obtained more over a long period of time is offered.

[0069] According to claim 4, heat is hard to be transmitted to the base from a control circuit substrate side, and moreover, since the heat dissipation nature from a control circuit substrate is also good, a light emitting device cannot be influenced much more easily of the heat which a control circuit substrate side emits, and can offer the lighting fixture of the quantity of light stabilized over a long period of time.

[0070] According to claim 5, since it can support based on the control circuit substrate of a plane [an easy configuration], the configuration of a light source unit becomes brief and further low cost-ization of a lighting fixture can be realized.

[0071] Since according to claim 6 a control circuit substrate is transparent and does not appear at all through a front lens, appearance appearance is very good.

[Translation done.]

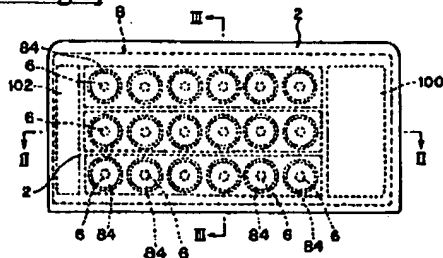
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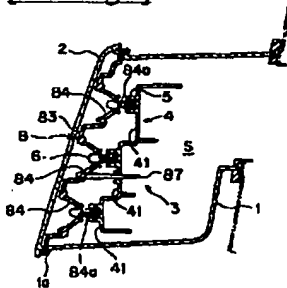
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DRAWINGS

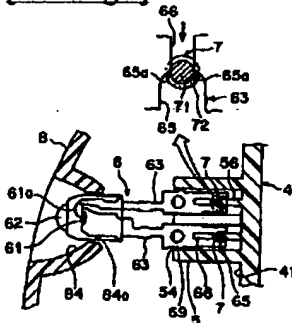
[Drawing 1]



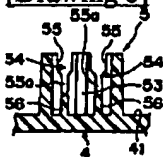
[Drawing 3]



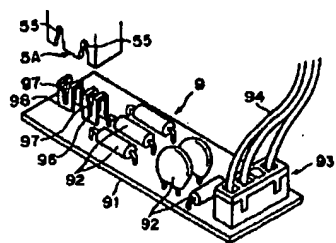
[Drawing 5]



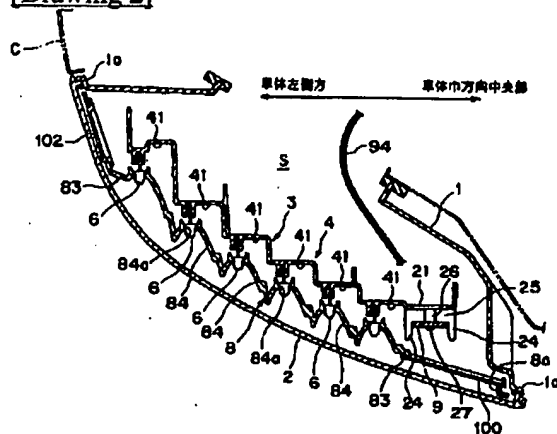
[Drawing 6]



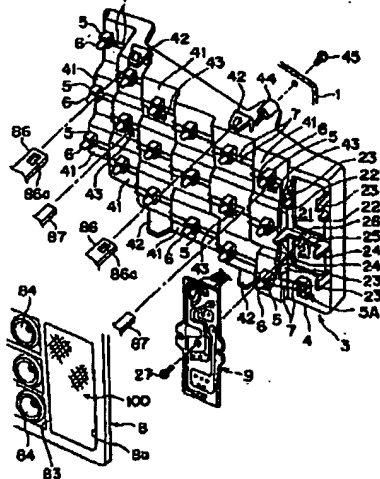
[Drawing 8]



[Drawing 2]



[Drawing 4]



[Drawing 7]

